

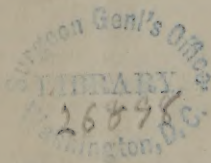
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# RESPONSE TO A PROFESSOR,

AND A

## SPECULATION ON THE SENSORIUM.

By BENNET DOWLER, M. D.



NEW-ORLEANS.

WELD & CO., PUBLISHERS.

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## SPECULATION ON THE BENEFIT.

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## A RESPONSE TO A PROFESSOR, AND A SPECULATION ON THE SENSORIUM.

BY BENNET DOWLER M. D. OF NEW ORLEANS.

[Professor Le Conte, of the University of Georgia, in a communication published in the New York Journal of Medicine for March, 1850, in referring to my "contributions to Physiology," which appeared in the New Orleans Medical Journal for November, 1849, expresses surprise that I did not mention his "experiments and conclusions on the seat of volition in the alligator," published in the New York Journal for November, 1845 : In the very next sentence after that in which this complaint is made, Professor Le Conte's own statement, presents as I had supposed a satisfactory vindication of my conduct as to that gentleman's interesting experiments as given by me in the July number of the New Orleans Medical Journal, for 1848. During the following year, (1849,) the "contributions" appeared. In preparing that paper, I, at first intended to give a second time, a full account of Professor Le Conte's able and original paper, not to do justice to him ; that I had already done ; but to fortify myself by an authority of so high a character, and I now regret, not for *his* sake, but *my own*, that I abandoned my original purpose. That purpose, I abandoned not merely because the restricted limits of the Journal made it necessary to exclude the greater portion of my own experiments, as well as the Professor's, but chiefly, because it appeared to me, after further reflection, inexpedient to repeat in the same Journal, what had been already inserted only a few months before ; though deserving to be reprinted *once*, in every journal of medicine in Christendom—inexpedient, *because my* experiments and deduc-

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\* The response, is included within brackets ; the speculation, is somewhat isolated ; but let no one read the one, without the other. The response is written solely through deference to the opinions of others. Although advised to this course, privately by the editor of this Journal, I did not think a necessity existed until I saw in the estimable Medical Journal, of Augusta, (Ga.,) a danger of misapprehension. I am quite willing to adopt Professor Le Conte's maxim : Fiat justitia etc.



tions were in many respects, fundamentally different from those of Professor Le Conte, though corroborative of his, so far as the phenomenal history of the alligator after simple decapitation is concerned, with one exception, which is this: Professor Le Conte declares that a decapitated alligator cannot have "two separate and independent centres of volition," although his experiments clearly show that the separated head, as well as the body, had each a "separate and independent volition."

Professor Le Conte makes the following statement, in the New York Journal of Medicine, which is, as I thought, and still think, a full justification of my supposed omission: "Dr. Dowler published in the New Orleans Medical and Surgical Journal, for July, 1848, *et seq.*, my [his] experiments quoted in *extenso*, and fully acknowledged their physiological bearings." "These experiments (it is myself that is quoted,) refute the universally received doctrine which localizes sensation, intelligence, volition, &c., exclusively in the brain. After quoting Mr. Solly's views in relation to the seat of sensation and perception, Doctor Dowler further says: 'Now instead of these diluted waters of opinion, let the reader look at Dr. Le Conte's experiments, massive as a mountain of granite.'"

As to "priority in this *field* of investigation," I have yet to learn that Professor Le Conte had preceded me, though, I concede to him priority of publication, in crocodilian physiology. As early as 1841, I had ascertained that the reflex theory was erroneous.

So far as I can learn from Professor Le Conte's paper, his experiments on the *alligator* began, March 10th, 1845, just twenty days before mine. The reason why I published my more recent experiments, is a very good one, namely, these were witnessed by many gentlemen of high professional standing and moral excellence, whose testimony it would be a folly to impeach—a testimony which has been accredited by the most competent critics, as altogether conclusive, with one or two exceptions; exceptions, which appear to proceed, not from any knowledge of the character of the witnesses, not from any attempt to verify the experiments themselves, but from that illusory test of truth, namely, preconceived, pre-advertised opinion. And here, I beg leave to insert a single paragraph by way of episode to my "contributions to physiology," inasmuch as these "contributions," so far as they occupy similar ground with those of Dr. Le Conte, confirm his completely; and it is verity, rather than priority, which is most important. The essay entitled "contributions to physiology" has called out two dissenting critics; the one Hesperian; the other Austral, in geographical position; both write fluently and able; both agree very well, and he dissent of both is of a three-fold import: first, they grieve at the unanimity with which the medical press has approved and encouraged my humble labors; next, they agree that I am damaging what they call physiology, instead of building it up; and, lastly, they say that my experiments, though witnessed by many most enlightened persons both in and out of the profession, cannot be true, and must be "a hoax." They also have several minor strokes of wit against my reasoning from "a single case," and they say that 'they are in favor of *patient dissection*.' If these

gentlemen will pay me a visit, I will engage to furnish "patient dissections" in MS., enough for three months' reading and study, and among these they will find plenty of crocodilians which "drag their slow length along" from volume to volume; or if these gentlemen are willing to encourage, or even tolerate *American* experiments, and will send me a publisher, I will, *without* cost (for the first edition,) put in his hands a few volumes of *experiments*, with or without comment. Of wit and logic I may have none, but of experiments I have an exuberance—more than the treasurers of the States of Ohio and South Carolina are able and willing to put in print.\*

Professor LeConte's experiments relate to decapitation: and also to the destruction of the spinal marrow; besides these, mine relate to vivisections of the viscera, and the ganglionic or sympathetic system, together with *transverse*, not longitudinal sections of the spinal cord, with and without decapitation. Professor LeConte maintains the *oneness of volition in the divided animal*; I regard volition in the divided animal, as assuming a plural character, because the divided portions manifest sensational and volitional phenomena, not simultaneously, when completely severed, but in different times, places, velocities and intensities. Hence there must be in these divided portions of the animal, independent faculties, corresponding to these independent phenomenal manifestations; for it is unphilosophical to ascribe the same phenomena in three or more similar cases, to dissimilar causes, or to no cause at all. The Mississippi river descends an inclined plane to the sea, by the force of gravity; but is it logical to assert that the Amazon and Ganges descend by different forces? My plans, experiments, and results differ essentially from Professor LeConte's, and, possibly, from all others, in showing that the transverse division of the cord, in the neck and trunk, without completely dividing the animal, does not prevent the simultaneous action of the head, trunk, tail, and limbs, in a sensational and volitional manner. This astonishing result, to which the several witnesses present bore testimony, is one that I intend more fully to verify as soon as possible, by repeated experiments before witnesses that cannot be gainsayed by closeted speculators who oppose the *vis inertia* of their *opinion*, to palpable facts that are irreconcilable with their system of orthodoxy, or rather, with that of their leaders; therefore, when the latter give up this system, the former ought to do so too.

I could quote several authorities showing that defection to the theory of Bell and others, already exists among these leaders. Their followers ought not to delay their conversions too long. Dr. John Conolly, in his recent Croonian Lectures, published in the London Lancet, (Jan. 1850, Am. Edit.) says: "The yet unsettled state of many important

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\* My quotations, showing in their own words what physiologists teach concerning the supposed double functions of the nerves, the spinal roots, the excitatory system, etc., are scrupulously accurate, and all who deny this, are bound to adduce the proof of their assertions. In every case this is easier than experimenting; easier than the making of books out of books, though not so easy as following a leader who does all the thinking for one.



questions relative to the nervous system, and the *revolution even now taking place in its theories, or the mere rising up of doubts respecting that great and beautiful theory of sensation and movement which was once supposed the labors of Sir Charles Bell had settled on sure foundation*, tend, at least, to enforce caution. Men, now, of middle age, find the whole face of physiology to have changed since they were students, and the most important parts of the change are quite recent."

The Med. Chir. Rev. for April, 1849, admits that the reflex system of Dr. Hall is no longer believed in England, except by its reputed father; or words to that effect. It is probable that if this gentleman should renounce this system, the believers in this country would renounce it too, without a sigh, or an experiment, whereby to test its truth or falsehood.

Professor LeConte, agreeably to the universal opinion, maintains the doctrine of a centralized sensorium, though he is forced by his own conclusive experiments, to admit that the spot in which the sensorium is located cannot be in the brain, exclusively, but must extend to the spinal marrow, also, in certain animals, among which he places the alligator—a sure step—a bold step for a central sensorialist, but still not bold enough to meet the actualities of the case. In relation to the locality of the sensorium, Dr. LeConte says, that "no half results, no approximations are sufficient; if sensation and volition are functions of the spinal cord in the lower vertebrata, experiment should give us unequivocal indications of it;" but in his concluding remarks, he recoils from the obvious deductions which his experiments teach: "Experiments were made on the head [of the alligator, after decapitation]—the jaws snapped at anything which touched the teeth, tongue, or lining membrane of the mouth"; while, on the other hand, to use his own words, "the motions [of the headless trunk] appear to have been performed with a perfect knowledge of the end in view; they were particularly directed to that end—were volitional—varied according as the conditions in which they were elicited, altered;—the animal seemed to know, to intend, and to accomplish its definite object", and yet Dr. LeConte appears to repel the inevitable consequences resulting from his own experiments; for he says, "It is hardly possible to conceive the co-existence of *two separate and independent centres of volition and sensation in any animal, because we find it impossible to understand how consciousness can be subdivided*", thereby rejecting the very thing proved by his experiments.

Dr. Le Conte does not even hint, much less admit, the possibility of a diffused sensorium. He is a centralist agreeably to the universally received doctrine of the present day; a doctrine upon which a few hurried remarks will be offered in the sequel, as the present occasion seems to demand. My only motive in contrasting Dr. Le Conte's views with mine, is to show the nature and extent of the experiments, and the conclusions of each, without presumptuously asserting that he is wrong, and I am right.\*

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\* I accept as satisfactory, Dr. Le Conte's explanation of the extensive leap performed by the separated head of the alligator, which I reported in the contributions,

The cultivator of science, must abide the developments of time, the collision of interest, the shock of passion, and the scrutiny of talent, in the confident hope that the high behests of impartial truth will ultimately gain ascendancy.]

*Speculations on the Sensorium.*

A diffused sensorium is less incomprehensible than one wholly centralized, particularly in the absence of any structural peculiarity as indicative of the latter, not to mention finality, or the adaptation of means to ends. Teleology, the doctrine of final causes, though extremely difficult in application, and often conjectural in its results, is, nevertheless, a most fruitful principle in physiology, being rather synthetical than analytical—a *a priori*, because the *a posteriori* is not yet achieved. It looks to the transcendental as a means to the experimental; while, unlike the *vis inertia*, which blindly broods over the ponderous masses of unexplained experiment, the rubbish of countless centuries, it diffuses life and movement everywhere, being to the empirical or experimental philosophy, what the Rosetta stone is to hieroglyphics. Nothing can be more unwise than the rejection or depression of this principle by some of the Baconian philosophers. The all-comprehending mind of Newton, accustomed to rigid demonstration and experimentalism, saw the immense importance of this principle. After reviewing his own vast researches, he observed, towards the close of his life, "it gave him particular pleasure that his philosophy had promoted the attention to *final causes*."

Although the essential *modus operandi* or manner of a finality may be beyond mortal ken, the finality itself is clearly attainable; as in the adaptations of the eye to vision, the muscles to motion, the teeth to mastication, etc. Harvey was led to the discovery of the circulation, not by accident, but by the mechanical adaptations in the veins by means of valves, which showed the purposes of nature by contriving a mechanism favoring the passage of the blood in a definite direction. He saw how the blood *ought* to move, and then he proved that it did so move. In the nervous system adaptation is less manifest, or rather, is less known; nay, it is not known at all. One thing appears certain, namely, that the theories of nervous action hitherto proposed, not only fail to recognize this principle, but run counter to it, violating the evidence that analogy furnishes, such as an assumed nervous fluid without any structures adapted to its circulation; vibrations, traveling impressions, and the like, belong to the same category.

There is no special anatomical point in the brain, in the spinal cord, nor in the ganglionic system, as yet ascertained by structural adaptation, for the exclusive purpose of cognizing sensations, independently of

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&c.; which he says "was produced by a rapid and forcible depression of the lower jaw reacting against the plane of the table. Under such circumstances, the point of contact of the anterior extremity of the lower jaw with the table, becomes the *fixed point*, while the point of application of the *force* is transferred to its posterior or articulating extremity. Upon mechanical principles, such a force, if sufficiently powerful, must project the head upwards and forwards." (N. Y. Jour. Med., March, 1850.) The masseter muscles of the alligator are massive and strong.



the peripheral portion of the nervous system. The neurological tree is planted in the midst of the garden, among the other trees of life, all of which must suffer from central disease or mutilation, as in vivisections. The branches may be lopped off without the same destructive effects which must accompany operations in the centre.

Where (the skeptical may reasonably demand) is this sensorial limbo? this seat of intellectualism and sensationalism? this plenary dualism of feeling and willing, of reception and transmission, of convergency and emanation, of contact between mind and matter? this *ens rationis*? this consolidation of the objective and subjective? this homogeneous Me? Is it not rather a spectre from the idealism of Aristotle, and not an honest ghost, but a tenebrosity born of Nox, daughter of Chaos, whose anatomy we know that we don't know?

The hypothesis that the entire mass of the nervous system, an undefined atom or sensorial spot excepted, is the mere instrument of this assumed spot, being nothing but the conductor to and from it, being itself devoid of sensational cognition, is at once gratuitous, improbable, incomprehensible, and contrary to the experience of mankind. If sensation be wholly due to the nervous system, (a questionable point,) a property bestowed by the Creator, which we can only comprehend as an ultimate fact, like gravitation, why should a tangled veil of hypotheses be thrown around it, as an unknown but omnipotent power, working by double sets of undiscovered nerves and traveling impressions, fluids, vibrations, etc? Does nature prefer complexity to simplicity? long routes to short ones? multiform means for accomplishing the simplest ends? Does she lavish her most exquisite workmanship upon the peripheral nerves merely that they may subserve, by indirect and reflex methods, the purpose of some unknown aggregation of pulpy atoms, in the centre, where, nevertheless, all the pains and pleasures, all the healthy and morbid actions of both mind and body are to be realized or sensationalized exclusively? What a vast amount of industry on the one hand, and *inertia* on the other! "Marivaux asked a young and athletic peasant why he did not work? 'Ah, sir!' said he with a sigh, 'you do not know how lazy I am.'" Would it be reasonable to require Queen Victoria or General Taylor, though in the centre of the nation, to do all the work, physical or sensorial, for the entire population?

An able critic, in the Western Lancet, (Feb., 1850,) in a review of my paper, ("Contributions to Physiology,") says, with great clearness and logical force, "we do not see but that it is as rational to suppose that nerves may in themselves possess intelligence, as to locate and limit the whole mind within the brain, and thereby make the nerves mere mechanical media of sensation and volition—unintelligible conductors of ideas. The experiments formerly relied on do not, we think, very strongly support this prevalent opinion. We are told by some, that the office of the nerve is merely mechanical, and that intelligence begins when the nerve enters the brain, and not before. This is the most popular idea of the present day. We are pleased with this idea of mind being diffused throughout the entire body—this *diffusion of soul*,



It is more elevating and expansive than the one that limits its action to one central organ.

"We do not mean to say that our author has no office for the brain to perform; on the contrary, he holds it to possess all the powers hitherto assigned to it; but contends that *all* intelligence is not confined to it. There does appear a necessity for mind in the nerve, or how could it *convey* intelligence."

The exclusively central theory is both complicated and extremely mechanical, without mechanical adaptation—a labyrinth of assumptions, each of which tends but to obscurity, instead of an intelligent plan, or a well developed finality. Many of these difficulties are avoided by the admission of a diffused sensorium; by the admission that the mind generally, as well as specially, cognizes sensations where the changes and impressions really are, whether in the central mass of nervous matter or in the peripheral portions distributed to the organs, and to the surface, the mind feeling in the hand as well as in the head, without the intervention of traveling impressions along nerves which have been strangely denied the power of sensation, and which serve as mere carriers for an imaginary sensorial point, wholly unknown, and all this, for the purpose of explaining what does not really exist, and which, at the same time, serves but to confuse that which does exist.

It may be safely affirmed that no one but a central neurologist, ever imagined that touch or taste took place as a sensation in the brain only, and not in the organ impressed or affected; and even neurologists themselves, are always obliged to talk, believe and to act like other people, without any practical reference to their central theory. That which does not exist, as a sensorial atom or aggregation of pulpy, nervous atoms—or an unknown, yet physical, excitomotory agent which acts in a reflex manner, or an unknown nervous fluid, or an unknown chemical change, or some other equally imaginary agent or agencies, are offered in explanation of self-evident, ultimate and wholly inexplicable facts, namely, we are endowed, we know not how, with the power to feel, to will, and to move.

The doctrine of a diffused sensorium, so far from detracting from the importance of the nervous system, as the agent of sensation, augments its high claims in this respect, through all its associated connections with each living tissue of an organized being; while, on the other hand the centralists degrade the most exquisitely organized portion, in order to exalt an imaginary pulpy point in the centre.

That aggregation of elements and phenomena constituting life, is not deducible from a single tissue or organ, since all contribute something, particularly, the nerves and muscles. Much that is called nervous action is, without doubt, due to vitality or life; and even the nerves themselves, may owe much of their superiority to the vital principle, rather than to any thing inherent in that tissue. The vital principle, in an abstract sense, is, perhaps, incomprehensible, but as expressive of a general fact, it is well understood. That able observer and writer, Dr. Wm. P. Hort, advocates the vitality of the blood, and suggests most ingeniously its applicability as an analogue of sensorial diffusion. Dr.

Hort says, "If the distinct and independent vitality of the blood can be established, it will be a fact in physiology, sustaining by analogy, the *diffused sensorium* in the alligator, &c."\* Now, whether the blood contribute directly or indirectly to sensorial action, or is itself a central or peripheral sensorial agent, or a combination of both agents, certain it is, that it furnishes one of the essential conditions of neurological dynamism. The blood probably contributes directly, though subordinately, to the result termed sensation—for in many instances, in physiology, as in physics, a special function, or result, has for its antecedents, not a single cause, but a composition of causes, all of which are essential to the finality. The apparently simple path pursued by a planet, is due to a composition of forces, which have for their point of departure the *vis inertia*. The rising of the sun is a result to which the entire solar system contributes essentially.

Besides, if the blood contributes nothing to the essential conditions of sensation, it certainly contributes to, or forms a part of general vitality, without which, the nervous system is but inert matter. It may be, that the life of blood is really the fountain of life to the sensorium itself, whether the latter be central or peripheral, or a union of both. Hence, this may be one of the advantages derived from the universal diffusion of the blood. Hence, the temporary or permanent loss of the sensorial life, which instantly occurs, when the requisite quantity of blood is not transmitted to the general system, by the heart and capillaries, as in fainting. Hence, the return of sensation, and voluntary action, with the renewal or diffusion of the circulation. If, with Hume, we define "a cause to be an object, followed by another, where all the objects similar to the first, are followed by objects similar to the second; where if the first object had not been, the second had never existed," the blood would be found occupying a high place if not a primary element in sensational causation. Experimenters admit that the complete arrestation of the blood (from ligatures, and the like obstructions) causes the loss of sensation and volition. The nervous centres, as the brain and spinal cord, may be greatly injured; large portions disorganized, and yet, the patient may live for days, months, years; but the loss of a large quantity of blood is always speedily fatal. Hence, this is the usual method adopted for killing animals. Even an ordinary blood letting often causes fainting which is almost a temporary death, with loss of feeling and voluntary motion. The circuitous logic, by which exclusive neurologists, seek to explain fainting by means of the nerves, is altogether inconclusive. A short, plain, and direct route is forsaken, the loss of the vital fluid is overlooked, for the sake of a doubtful theory.

The nerve-matter, in its isolated state, is incapable of thinking, feeling, and willing, even though these phenomena might be chiefly due to that tissue as inherent properties, yet, one can seldom be sure that a great function of the system is not the common result of several tissues and organs. The blood in its natural channels, may contribute directly

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\*New Orleans Medical Journal, March, 1850.

or indirectly to thought. Again, the muscles probably feel, as well as act, independent of the nerves, though only to a limited extent. The latter, may, in every complicated act, contribute directly; or, they may only furnish the essential conditions necessary to the finality, as in the case of the heart's function, where the muscular force is, probably, the predominating principle.

The doctrine of a special, sensorial point, is a mere assumption: that this sensorial point cognizes only by means of transmitted impressions, the nerves serving only as mere conductors, is an assumption. The mind becomes conscious of sensation, without the intermediate act of an entity or transmitted impression. In fact, this neurological doctrine is similar, or rather identical with the exploded doctrine of Aristotle, concerning *images, forms, phantasms, sensible species*, which are not things, or *objects* themselves, but their pictorial representation, intermediary agents, connecting the sentient mind, with the externalities of nature; in a word, impressions and the resulting sensations. Locke, also, maintained that the mind perceived impressions only, not things. Berkeley saw the consequences of this doctrine, and was enabled, thereby, to show that there was no proof of the existence of a material world, inasmuch, as the mind could know nothing but ideas, or impressions. Theorists of this school contend that as the mind cannot act where it is not, it can cognize nothing but its ideas, which, however, answer the purposes of realities. Although centralists do not apply the doctrine of impressions to the same purposes, namely, to show the non-existence of matter, yet they seem virtually to adopt the fundamental idea as good enough for physiology; that is, they regard one point of the nervous system as appropriated to the reception of impressions, which travel along certain, double, nervous tracts, in contrary directions.

The grand error in this system is, the assumption that the mind cannot perceive things, phenomena and relations, but only the contact of the *impressions or ideas of these*; an assumption contrary to common sense and universal experience. The reality of the thing perceived, is self-evident, not the intermediary contact of the idea or impression; and, in a practical sense, every science deserving the name, rests upon this basis; and the sceptic is obliged to adopt it in his conduct, though he may affect to reject it in his theory. The relation between the mind or sensorium, and the object cognized, requires no intermediate impinging entity called impressions, but is a direct operation, intuitively perceived as such; as in the case of a diffused sensorium.

As the word *impression* is mechanical, let us try it mechanically, and see how it will work in the matter of war. Not long since, General Taylor made an impression on the periphery of Mexico, on the one side, while General Scott made an impression on the other. The shot which they threw into the walls and castles of Monterey and Vera Cruz, did not reach the sensorial centre of the nation, that is, the capital. If the impression of spent balls can not only travel, but do even greater execution than the impressing balls themselves, why was it necessary for General Scott to cut his way, inch by inch, to the very cen-



tre of the city of Mexico? How can a physiological impression travel through the masses of the body, without its seal, any more than a cannon-ball impression on the castle of San Juan can traverse the mountains of Mexico to the national palace without its metallic reality? A traveling impression is a fact, or it is not. If it be only a poetical invention, it ought to be made known as such. Who pretends that the Mississippi is really the father of waters, the true Adamic progenitor of all other rivers? Where is Eve, the mother? As a figure of speech it is more flattering than accurate, seeing the Amazon is much more entitled to that appellation. The sacred writings say, "God is a rock;" but geologists never commit the mistake of inquiring whether he really belongs to the silurian or granitic formation. The term *impression*, being definite and mechanical, and with all theoretical, is, even as a figurative term, not a judicious one, wherewith to characterize innervation, or that change termed sensation, of which we know nothing but the fact itself: a change that some ascribe to the circulation of a nervous fluid; others to vibration; others to chemical action, and so forth.

Those who admit that a *little* portion of the nervous system only is endowed with a faculty to feel, might as well admit, at once, the broad principle, namely, that all parts feel. Their sensorial logic, as it now stands, is no better than the ethical reasoning of the actress, Madameoiselle ———, whose chastity having been called in question, she defended herself by saying, that, although she had had a child, it was a *very little one*!

If any one atom in the centre, or periphery, possesses the power of feeling, so may every atom, for anything that can be perceived to the contrary in the anatomical arrangement of the nervous system. There is nothing to show that the peripheral nerves are mere conductors, insensible instruments, whose sole function is to minister to a sensorial spot or point in the centre.

Nor does this central assumption contribute to prove, what some suppose it proves, namely, the unity of the sentient being, called a person. As the sensorial spot or mass is material, and infinitely divisible, it is no more an intelligible type of unity than the totality of the organized being. The unity of a building consists not in a single brick. The same is true of the nervous skeleton.

So far as consciousness is concerned, an affection of the periphery, as a vaccine pustule, is always referred to the part where the pustulation exists, and not to the central point assumed as the central sensorium commune, as the percipient mind,\* and this reference possesses all the force of intuitive evidence.

In no point of view, whether transcendental or experimental, does a central sensorium solve the difficulties of sensation, while it is, in itself, more difficult to understand than any other within the whole circle. All that can be known of the nerves, or of matter, both living and

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\*The mind alone is sentient and percipient; neither tissues, nerves, or brain could, of themselves, or from any property or change of which they are capable, become, in any sense, conscious of their condition. In the brain alone it [the impression] may be *perceived*." [Kirke & Paget's Phys., 42, 295.]

dead, is its phenomenal history, not its essential essence, not its internalities. That the mind is united with the entire body, and not with a mere sensorial point, is more than probable. That the sensorial activity is more concentrated and more complex, and varied in the centre, than in the periphery, is not denied.

Is it not an assumption to maintain that a wound of the periphery is cognized, not at the place, but solely in an unknown point in the centre, through the intermedium of transmitted impressions? May not the centre furnish the essential conditions only to the peripheral sensation? May not the former partake equally and simultaneously with the latter in the cognition? Does not every one, in spite of the central theory, refer the pain to the spot wounded? Is the wounded part without a sensorium of its own? Why should it be a mere tender, or a runner to an unknown and uninjured point in the brain? Why should not the injured nerves themselves feel? Why should they be but insensible, passive conductors? What an endless complexity! The centralists admit that both hemispheres of the brain are insensible, and may be cut down, slice after slice, to the tubercula quadragemina, without pain to the living animal. Again, pathological anatomy shows that a large portion of the brain may be disorganized by disease, and yet, in many cases, the sensations, voluntary motions, and the intellectual phenomena, remain.

Now, it is questionable, whether the brain, the assumed seat of sensation, cannot better bear the loss of its substance than the peripheral part of the nervous system, ounce for ounce. Has any one ever cut away a great portion, not to say many ounces of the nerves from the limbs and surface, without pain, not to mention death? Is not the fact vouched for by vivisectioners, namely, that the brain proper may be cut away in slices without pain, strong proof against the central theory of sensation?

The evidence relied on by the centralists, so far from establishing their doctrine, appears to me, far more conclusive in favor of a diffused sensorium; that is to say, the paralysis, and insensibility resulting from the division or disorganization of a nerve, do not prove that the nerve is the mere insensible instrument of the brain. It is more rational to suppose, that, as the nerve of the particular part palsied has been disorganized, so, according to all analogy, the function of this part is, from this cause, altered. Why travel from the part *injured*, to a sensorial point *not injured*, in order to explain the effect produced? If the periphery have, as I contend it has, more or less of the sensorial power, then the phenomena following disorganization of the peripheral nerves or sensoria, are such as might be expected *a priori*. If the periphery were the true sensorium; if the brain were its insensible instrument, merely, it is probable that the destruction of the brain would interrupt the sensorial action and unity of the surface, because no part is wholly isolated or independent of the other parts of the same tissue, not to mention the associated tissues, which either contribute towards the common finality, or furnish the essential conditions for the unity and efficiency of the special function, whatever that may be.

Dr. Reid truly says, that, "Sensation can be nothing else than it is felt to be. Its very essence consists in being felt; and when it is not felt, it is not. There is no difference between the sensation and the feeling of it; they are one and the same thing." Now, if sensational cognition be restricted to sensorial point in the centre of the brain or spinal cord, it can only be known by experience, and every sane person could testify to its truth, since this truth, if truth it be, is not of such a character, so recondite as to require profound learning as in many astronomical calculations. Newton had no more knowledge of nature of gravitation, in itself, independent of its laws, than the savage of the wilderness. A fruiterer can judge as well concerning the taste of a sweet or a sour orange, as a La Place. As, therefore, the most learned physiologist is unacquainted with the nature of sensation, and knows nothing of any central point adapted to that end, his testimony is, in this particular case, very little better than that of the unlearned. If we take the testimony of mankind generally, as to the seat of sensation, perhaps, not one in a million will even so much as think of a point in the brain, as possessing exclusive sensational and volitional jurisdiction, which every one ought to be conscious of, if it be true.

If the fundamental doctrine of phrenology be true, the faculties of the mind have many different seats; a topographical distribution favorable to division, though the system claims vastly too much for the brain; too much for true science.

"Phrenologists," says Dr. Mayo, "have thrown their work into a great number of pigeon holes, and have separated, very arbitrarily, into small parcels, what more skilful theorists would have collected into larger masses." [*Elem. Pathol. Mind*, 20.]

Partial insanity—derangement of special faculties, often in relation to one subject alone, (monomania,) affords a presumptive proof that the mind is diffused, rather than concentrated in one sensorial spot. That a single point should be the seat of all the mental faculties, and their diseases, and that a disease of this point should affect one faculty, and not the others equally seated in this same point, must appear very improbable, and very little analogous to the pathology of diseases in general; as these latter have many seats, and not one only.

The entire oneness or unity of volition, in even the natural or undivided state of an organized being, may be questioned. Simultaneous, different, and conflicting trains of thought, sensation, and volition, are cognizable in both the waking and sleeping states. In dreams, in diseases, and in mental derangement, a multiformity of co-existing volitions seems to be indicated in many cases. Personal identity appears to be lost or divided. The individual imagines himself a plurality or duality, or trinity; one thinking, willing, talking, arguing, disputing, and acting after a particular manner; the other in a manner quite different. Suppose a multiform will, or a leading will, with co-existing sub-wills, the former ruling the latter, (as mesmerists and electro-biologists pretend to rule their subjects), combining the latter, conformably to rational ends, when in health, but during sickness, or mental disease, losing this control and unity; then, it might be expected, that voli-



tional derangements, a loss of oneness, a loss of combining power, would take place, as we find from experience. There appears to be a kind of special will in many of the organs, which is not attributable to the general will, and which is often in opposition to it; and therefore, for the want of a correct term, called involuntary; as the closure of the eye, on the approach of an object that might injure; the withdrawal of a limb from an irritant, during profound sleep; the expulsion of an offending substance, from the glottidian aperture; the ejection of ipecac, from the stomach; the fœtus from the uterus; and many other similar acts. To attribute these actions to instinct, or reflex action, of which we know nothing, is less intelligible than to refer them to a volitional faculty, of which we know much. Even the lowest of these special, isolated, uncombined actions are stamped with the volitional type, not being *blind*, as instinct is supposed to be, but in a great degree intelligential, having, for their purpose, self-preservation.—Writers take great pains to exclude the *word volition*, from their *definitions*, while the *facts* by which they *illustrate*, what they call a *blind power*, are but an enumeration of the most *perfect acts* or *ends*, called *volitional*, being the actual finalities aimed at by the latter, namely, the well being of the individual:

"And reason raise o'er instinct as you can,  
In this 'tis God directs, in that 'tis man."—POPE.

If the sensorial spot be so small that it cannot be seen, how much smaller must be the little traveling entities—not metaphors, called impressions! As no microscope can make them visible, it is probable that the strongest believer in their existence would hesitate to take an oath upon the books of Hypocrites, that he ever saw one in all his life. This sentient point, in men not of one idea, as the Kants, the Cuviers, the Shakspeares, the Newtons, and the Franklins, must be excessively crowded, and closely packed.

The functions of the centre, morbid and physiological, are less known than those of the circumference, so far as sensation is concerned. The same may be affirmed of internal, compared with external pathology and therapeutics.

The assumed indivisible character of sensation, personal identity, and the like, I wish to avoid as much as possible, since they are metaphysical questions of no importance, when opposed to palpable facts, showing that the division of an animal, divides its sensation and volition, as plainly as the body itself. The doctrine of unity, or personal identity, how plausible soever it may be, in psychological ratiocinations, cannot destroy facts, though the latter may seem to conflict with the assumed laws of the spirit-land, of which, however, we only know, that we know nothing with absolute certainty.

On the whole, it may be affirmed, with great probability, that the optic, gustatory, olfactory, and auditory nerves, as well as those of a more general character, concerned in touch, in their natural conditions, in connection with the entire system, centripetal and peripheral, constitute so many sensoria for sensational cognition. Admitting (what, indeed, is not the fact) that the unity of the nervous system is such that

the destruction of any one of these sensoria would render the finalities of all impossible, still, the doctrine of diffusion, as appertaining to the whole, as a whole, would not be disproved. A special sensorium may be annihilated without destroying the other sensoria of the general system. For example, the loss of the visual sensorium, or sight, like the lost Pleiad, leaves the remainder of the constellation undiminished in splendor.

In conclusion, I beg leave to add the following remarkable passage by an able experimenter, Dr. Robert Whytt, whose work on the Vital Motions, was published ninety-nine years since, in his native city, Edinburgh: "Not to perplex ourselves with metaphysical difficulties, we shall recite a few experiments and observations from which we are led, by analogy, to conclude that the motions of the separated parts of animals are owing to the soul or sentient principle still continuing to act in them."

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